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Abstract:

Oxidative stability of marine phospholipids

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Many studies have shown that marine phospholipids (MPL) provide more advantages than fish oil. They have better bioavailability, better resistance towards oxidation and higher content of eicosapentaenoic acids (EPA) and docosahexaenoic acids (DHA) than oily triglycerides (fish oil). The objective of this study is to investigate the oxidative and hydrolytic stability of MPL. In addition, this study also investigates the effect of chemical composition of MPL and Maillard reaction (interaction between lipids oxidation products with the residue of amino acids) on MPL emulsions' stability. Firstly, MPL were prepared in the form of emulsions by high pressure homogenizer. Then, the oxidative and hydrolytic stability of phospholipids was investigated by measurement of simple chemical analyses such as Peroxide Value and Free Fatty Acids, and ^{31}PNMR after 32 days storage at 2ºC. The oxidative stability of MPL was further investigated through measurement of secondary volatile compounds by Solid Phase Microextraction at several time intervals. On the other hand, the Maillard reaction was investigated through the measurement of color changes and pyrrole content before and after 32 days storage. Preliminary result suggested that MPL emulsions have good hydrolytic stability and relatively good oxidative stability as compared to fish oil containing emulsions. As a conclusion, MPL with different chemical compositions have affected emulsions' stability differently.